schools, entitled "Geography of Nebraska".[2] Chapter 5 of this work is a sketch, in clear and simple language, of the average and typical climatic features of the State, with a rainfall chart, and a little photogravure entitled "Typical Snow Scene in Nebraska". The latter is noteworthy; pictures have been heretofore little used in climatological literature, tho their importance is generally recognized in other branches of science.

RAINFALL OF THE NETHERLANDS.

A discussion of the rainfall of the Netherlands, by A. J. Monné, recently published in instalments in Hemel en Dampkring, has been reprinted as a separate pamphlet.[3] In this work the author summarizes the results obtained at the stations of the Royal Netherlands Meteorological Institute down to 1900. The longest records extend back to 1845. Both normal and extreme values of the rainfall at the several stations are set forth in the tables, and a chart shows the average distribution of the annual fall over the kingdom for the period 1886–1900.

RAINFALL OF BELIZE.

A recent Colonial Report for British Honduras (Annual No. 455) gives the average rainfall at Belize for the twenty-two years 1883–1904 as 80.8 inches. This is slightly higher than the 12-year average given in Supan's "Verteilung des Niederschlags". The greatest annual rainfall is given as 114.12 inches in 1900; the least, 55.29 inches in 1893.

RAINFALL OF HERMSBURG, AUSTRIA.

Hermsburg, which is situated on the south side of the Krainer Schneeberg, in Carniola, enjoys the reputation of being one of the wettest spots in the North Temperate Zone. The only stations in continental Europe having a heavier rainfall lie in the mountains of Montenegro, back of the Bay of Cattaro.

Doctor Hann publishes a rainfall table for Hermsburg in the Meteorologische Zeitschrift for October, 1906, from which it appears that this station had a mean annual rainfall of 3069 mm. (120.82 inches) during the nineteen years, 1887–1905. The wettest year was 1889, with 4458 mm. (175.52 inches).

RAINFALL OF GAMBAGA, GOLD COAST COLONY.

While stations on the Guinea coast, owing to their proximity to the equator, have two wet and two dry seasons in the year, stations lying a few hundred miles inland from this coast have but one wet and one dry season. At Gambaga, in the northernmost part of the Gold Coast Colony, (approximate latitude 10° 45′ north), the distribution of rainfall in inches, thru the year 1904, as published in Colonial Reports—Annual No. 457 (London, 1905,) was as follows: January, 0.00; February, 0.00; March, 0.16; April, 1.74; May, 6.65; June, 3.19; July, 10.01; August, 7.25; September, 7.97; October, 3.09; November, 0.00; December, 0.00. Total for the year, 40.06.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be loaned for a limited time to officials and employees who make application for them.

Athens. Observatoire National.
Annales. Tome 4. Athénes. 1906. 577, [2] pp. f°.

Christie, W[illiam] H[enry] M[ahoney].
Temperature of the air as determined from the observations and records of the fifteen years, 1891 to 1905, made at the Royal Observatory, Greenwich. (Reduction of Greenwich meteorological observations, Part 4.) Edinburgh. 1906. 67 pp. f°.

Cirera, R.
Notice sur l'Observatoire et sur quelques observations de l'éclipse du 30 Août 1905. (Mémoires de l'Observatoire de l'Ebre. No. 1.) Barcelone. 1906. 56 pp. f°.

Finland. Institut Météorologique Central de la Société des Sciences de Finlande.
Observations météorologiques. 1895–1896. Helsingfors. 1906. 129 pp. f°.

Great Britain. Parliament.
Statistical tables relating to the British colonies... Pt. 29, 1904. London. 1906. [22], 887 pp. f°.

Hesse. Grossherzogliches Hydrographisches Bureau.
Deutsches meteorologisches Jahrbuch für 1905. Darmstadt. 1906. 75 pp. f°.

Holm, Ragna.
Ueber die abnorm kleine Sonnenstrahlung in den Jahren 1902 und 1903... (Arkiv matem. astro. fys., Upsala. Bd. 2. No. 4.) 6 pp. 8°. [Upsala. 1905.]

Italy. R. Ufficio Centrale di Meteorologia e Geodinamica.
Annali. Serie seconda. Vol. 15. Parte 2, 1893. Roma. 1906. 365 pp. f°.
Same. Vol. 16. Parte 3, 1894. Roma. 1906. 363 pp. f°.

Pantanelli, Dante.
Oscillazioni nella composizione dell'acqua del pozzo di piazza maggiore in Modena. (Pub. R. Osserva. geofis. Modena. No. 18.) Modena. 1906. 10 pp. f°.

Paris. Observatoire Municipal de Montsouris.
Annales. Tome 5. Année 1904. 3–4 fascicule. Paris. 1904. 8°.
Same. Tome 5. Année 1905. 1–4 fascicule. Paris. 1905. 8°.

Philippine Weather Bureau.
Annual report for 1904. Parts 1 and 2. Manila. 1906. 208 pp. 4°.

Prussia. Königliches Preussisches Aeronautisches Observatorium bei Lindenberg.
Ergebnisse der Arbeiten... 1905. 1 Band. Braunschweig. 1906. xxix, 144 pp. 14 tables.

Prussia. Meteorologisches Institut.
Deutsches meteorologisches Jahrbuch für 1905. Heft 1. Berlin. 1906. 38 pp. f°.

Royal Geographical Society.
General index to the first 20 volumes of the Geographical Journal. London. 1906. [27], 629 pp. 8°.

Scharf, Edmund.
Der Hagel. Halle a S. 1906. vi, 195 pp. 12°.

Schück, A.
Zur Kenntnis der Wirbelsturme. Bahnan. (Westindien, Indischer Ozean, Süd-und Nord-Ost Pacific.) (Beiträge zur Meereskunde. III Fortsetzung.) Hamburg. 1906. Pp. 49–83. f°.

Voss, Ernst Ludwig.
Die Niederschlagsverhältnisse von Südamerika. Inaug.-diss... Rostock. Rostock. 1905. 35 pp. f°.

Württemberg. K. Württembergisches Meteorologisches Zentralstation.
Deutsches meteorologisches Jahrbuch für 1904. Stuttgart. 1906. 64 pp. f°.

RECENT PAPERS BEARING ON METEOROLOGY.

H. H. KIMBALL, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a ——

Bulletin of the American Geographical Society. New York. Vol. 38. Nov., 1906.
Huntington, Ellsworth. The vale of Kashmir. [Part II.—The climate of the past. Pp. 668–682.]

Bulletin of the Geographic Society of Chicago. Chicago. No. 3. 1906.
Cox, Henry J. and Goode, J. Paul. (Ed.) Lantern slide illustrations for the teaching of meteorology. Pp. 1–130.

Journal of Geography. New York. Vol. 5. Oct., 1906.
Ward, Robert DeC[ourcy]. The characteristics of the zones. II.—The temperate zones. Pp. 337–353.

[2] Condra, George Evert. Geography of Nebraska. Lincoln, Nebr.: University Pub. Co., 1906.

[3] Monné, A. J. Neerslag in het Koninkrijk der Nederlanden. 's-Gravenhage, 1905.

Journal of the Meteorological Society of Japan. Tokio. 25th year. No. 10. Oct., 1906.

Sato, T. Construction of the pressure charts on the high-level planes, and their importance to the dynamic meteorology. [Japanese.]

Science. New York. New Series. Vol. 24. Dec. 21, 1906.

Ward, R[obert] DeC[ourcy]. Lantern slides for teaching meteorology. [Abstract.] P. 823.

Science Abstracts. London. Vol. 9. Nov., 1906.

S[tewart], J. J. Time variation of the initial nucleation of wet, dust-free air. [Abstract of article by C. Barus.] Pp. 550-551.

B[orns], H. Existence of the isothermal zone in the atmosphere at the height of 10 to 12 km. [Abstract of article by R. Nimfuhr.] Pp. 551-552.

Scientific American Supplement. New York. Vol. 62. Dec. 8, 1906.

Eliot, John. World weather. Pp. 25962-25963.

School Science and Mathematics. Chicago. Vol. 6. Dec., 1906.

Woodhull, John F. The per cent of oxygen in air. Pp. 762-768.

Symons's Meteorological Magazine. London. Vol. 41. Nov., 1906.

—— The climatological atlas of India. Pp. 181-184.

—— The rainfall of Beira. P. 193.

Annales de la Géographie. Paris. 15 année. 15 nov. 1906.

Le Cointe, Paul. Le climat Amazonien et plus spécialement le climat du bas Amazone. Pp. 447-462.

Annuaire de la Société Météorologique de France. Paris. 54 année. Juillet 1906.

Moureaux, Th. Comparaison entre la température moyenne des minima et maxima diurnes et la moyenne des 24 heures. Pp. 189-195.

Baldit, A. Sur la fréquence des températures à Saint-Maur et à Zi-ka-wei. 10 années 1890-1899. Pp. 195-201.

Maillet, Ed. Sur les pluies des saisons froides dans les bassins de la Seine et de la Loire. Pp. 202-203.

Bulletin de la Société Belge d'Astronomie. Bruxelles. 11 année. Sept.-Oct. 1906.

Paulsen, Adam. Sur la direction des courants électriques dans l'aurore polaire. Pp. 379-380.

Paulsen, Adam. Théorie nouvelle de l'aurore polaire. Pp. 381-394.

Durand-Gréville, E. Rubans et couloirs de grain. Pp. 398-409.

Ciel et Terre. Bruxelles. 27 année.

Rotch, A. Lawrence. Quand Franklin inventa-t-il le paratonnerre? (1 nov. 1906.) Pp. 433-437.

—— La température dans les mines du Witwaterstrand. [Note.] (1 nov. 1906.) Pp. 455.

—— Influence de la vie humaine sur la déperdition électrique de l'air. (1 nov. 1906.) P. 455.

Lancaster, A. and Millot, C. L'été de la Saint-Martin. (16 nov. 1906. Pp. 457-468.

Géographie. Paris. 14. Année 1906. 15 août 1906.

Buffault, Pierre. Le plateau d'Aubrac. [Climate, pp. 64-66.] Pp. 61-78.

Brunhes, H. Représéntation graphique de la hauteur de la pluie en fonction de l'altitude. Pp. 119-120.

Revue Néphologique. Mons. Nov., 1906.

Bracke, A. Nuages irisées. P. 81.

Bracke, A. Les halos et la pluie. Pp. 84-85.

Aus dem Archiv der Deutschen Seewarte. 29 Jahrgang. 1906.

Westermann, R. Der meteorologische Æquator im Stillen Ozean. Pp. 1-27.

Beiblätter zu den Annalen der Physik. Leipzig. Band 30. Heft 21.

Aufsees, von. Notice über die zeitliche Abnahme des Dämmerung lichtes. [Abstract of article by E. Hertzsprung.] Pp. 1100-1101.

Stöckl, K. Ueber einige Zerstreuungs-und Bodenluft Messungen in Kiel im Herbst 1905. [Abstract of article by K. Kaehler.] P. 1101.

Mac[he], H. Zum Einfluss der totalen Sonnenfinsternis vom 30 August 1905 auf die erdmagnetischen Variationen. [Abstract of article by A. Nippoldt.] Pp. 1101-1103.

Aufsees, — von. Ueber das Nordlicht. [Abstract of article by P. Villard.] Pp. 1103-1104.

Illustrierte Aëronautische Mitteilungen. Strassburg. 10 Jahrgang. Dez., 1906.

Bassus, K. v. Ueber die Abbildung von Gewässern in Wolkendecken. Pp. 433-434.

Q[uervain, Alfred] de. Die V. Konferenz der internationalen Kommission für wissenschaftliche Luftschiffahrt in Mailand. Pp. 441-442.

Meteorologische Zeitschrift. Braunschweig. Band 23. Nov., 1906.

Margules, Max. Zur Sturmtheorie. Pp. 481-497.

Rheden, Joseph. Wolkenhöhenmessungen mit Hilfe der Scheinwerferanlage des neuen Wiener Leuchtbrunnens. Pp. 497-504.

Quervain, A[lfred] de. Bericht über die V. Konferenz der internationalen Kommission für wissenschaftliche Luftschiffahrt in Mailand. Pp. 505-507.

Hann, J[ulius]. Die "Temperaturumkehr" mit der Höhe im Winterhalbjahr in dem niederösterreichischen Alpengebiete. Pp. 507-509.

Schubert, J. Wärmeaustausch der Seen und Meere. P. 509.

Halbfass, —. Uber den jährlichen Wärmeumsatz in Binnenmeeren. Pp. 509-512.

H[ann], J[ulius]. Zunahme des Regenfalles mit der Seehöhe. Pp. 513-514.

H[ann], J[ulius]. Resultate der meteorologischen Beobachtungen an den beiden Ausgängen der Magalhaesstrasse im Jahre 1904. P. 514.

Riegler, Wahrmund. Bemerkenswerte Hagelformen. Pp. 514-515.

H[ann], J[ulius]. Weitere Ergebnisse der meteorologischen Beobachtungen am Museum Goeldi in Pará. Pp. 515-517.

H[ann], J[ulius]. Der tägliche Gang des Regensfalles und die Maxima desselben auf Java. Pp. 518-519.

Friesendof, —. Abnormes Regenwetter. Pp. 519-520.

—— S. P. Langley's wissenschaftliche Arbeiten. Pp. 520-522.

—— Prof. Dr. Daublebsky v. Sterneck in Czernowitz: über die scheinbare Form des Himmelsgewölbes und die scheinbare Grösse der Gestirne. Pp. 522-523.

Mitteilungen von Forschungsreisenden und Gelehrten aus den Deutschen Schutzgebieten. Berlin. 19 Band. 3 Heft 1906.

Uhlig, C. Regenbeobachtungen aus Deutsch-Ostafrika. III. Pp. 274-290.

Naturwissenschaftliche Rundschau. Berlin. 21 Jahrgang. 22. Nov., 1906.

Ekholm, Nils. Die Luftdruckschwankungen und deren Beziehung zu der Temperatur der oberen Luftschichten. Pp. 622-624.

Physikalische Zeitschrift. Leipzig. 7 Jahrgang. 15. Nov., 1906.

Börnstein, R[ichard]. Die halbtägigen Schwankungen der Temperatur und des Luftdrucks. Pp. 836-837.

Lummer, Otto. Ueber die "Inversionstemperatur" des Luft. Pp. 864-865.

Weltall. Berlin. 7. Jahrgang. 1906 Nov. 1.

—— Wilhelm Lamprecht und seine Wettersäule. Pp. 35-36.

Wetter. Berlin. 23. Jahrgang. Nov., 1906.

Schubert, J. Die Witterung in Eberswalde im Jahre 1905. Pp. 241-246.

Ellemann, Fr. Uber die Sichbarkeit des Petersberges. Pp. 247-252.

Arkiv för Matematik, Astronomi och Fysik. Uppsala. Band 3. Häfte 1. No. 3.

Westman, J. Sur la couverture de neige de la Suède centrale et septentrionale.

THE STUDY OF PRACTISE FORECASTING.

By J. L. BARTLETT. Dated Madison, Wis., November 19, 1906.

Anyone who attempts to forecast future atmospheric conditions from weather charts is soon confronted with the problem of classifying the great number of weather types encountered and of formulating general rules for each type or for each set of approximately similar types. After some study of the subject a retentive memory undoubtedly becomes of great value in making rapid forecasts. But for the beginner to attempt to memorize and to classify mentally the weather conditions following the various types from simply examining successive maps is often a discouraging task, especially in view of the fact that no rule of forecasting yet formulated is wholly exempt from failure. Weather forecasting under existing conditions is the problem of determining the average results produced by causes which are more or less fixt. The causes may be considered to be the existing weather conditions at the time the forecast is made; the results are the conditions prevailing during the period forecasted for.

With the foregoing in mind the scheme of tabulating weather charts and portions of their data as shown in the accompanying table has been worked out. This table shows in condensed form the weather conditions prevailing over the Northwest during November, 1905. The general idea of the scheme may be seen at once from the headings of the various columns. In selecting these headings the two great general principles of prediction were kept in view, namely—the eastward movement in this latitude of existing weather conditions, and the influence of high and low pressure centers upon the weather in their vicinities. The following method of tabulation was then carried out.

GENERAL METHOD OF TABULATION.

One line, or more if necessary, is used for the data for each weather chart. On successive lines are placed the data for succeeding charts for the whole month. Under "high" and